

EXAMINER'S REMARKS

Claims 1,2 and 4-6 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 4,685,198 to Kawakita, et al (hereinafter Kawakita).

SUMMARY OF APPLICANT'S INVENTION

The present invention is a semiconductor isolation structure separating two active devices. The isolation structure prevents undesired electrical connections and coupling between two devices. The isolation structure has a deep region and a single shallow region. The deep region has a wider cross-sectional area than the shallow region. The deep region includes an oxide, and the shallow region has a protective wall that can be formed from an oxide and a nitride.

CLAIM REJECTIONS - 35 U.S.C. §102(b)

Claims 1,2 and 4-6 have been rejected under 35 U.S.C. 102(b) as being anticipated by U.S. patent No. 4,685,198 to Kawakita, et al (hereinafter, Kawakita).

In all embodiments of Kawakita, the deep region oxide of an isolation structure is connected to the deep regions of adjacent isolation structures, so that one continuous deep region oxide layer 42 (Figure 2j) is formed. In effect, the deep region oxide layer is connected to an array of shallow regions 48 (Figure 2i). Deep region oxides that were separated from each other were a problem in prior art (column 4, lines 4-5). This was a problem solved by the Kawakita isolation structure (column 4, lines 15-16). Kawakita teaches connecting the deep region oxides into a single continuous layer (column 3, lines 61-63), and specifically teaches away from non-continuous deep regions of oxide.

In distinct contrast to the prior art, the deep region oxide of the present invention is not in contact with other deep regions, nor does it form a continuous deep region layer (Figure 3). This novel feature specifically goes against the teachings of Kawakita. Each deep region oxide of the present invention is connected to only one single shallow region (Figure 3) – not an array of shallow regions as taught by Kawakita. This novel feature

can be found in claims 1 and 5, which now recite a single shallow region per deep region of the isolation structure. Claims 1 and 5 are believed to be allowable based on the novel features cited within. Applicants respectfully submit that claims 1 and 5 are patentably distinct over the prior art.

Dependent claim 2 is believed to be allowable based on the allowability of claim

1. Furthermore, the shallow regions of the Kawakita isolation structure are filled with polycrystalline silicon films **48** (Figure 2i), while the shallow region of the present invention is filled with oxide **910** (Figure 9). Claim 2 recites that "the isolation region comprises an oxide." Therefore, claim 2 is also believed to be allowable based on the novel feature cited within.

Dependent claim 4 is believed to be allowable based on the allowability of claim

1. Dependent claim 6 is believed to be allowable based on the allowability of claim 5.

In summary, the claims are distinct and patentable over Kawakita, due to the above-mentioned novel features. The rejection under 35 U.S.C. §102(b) is believed to be overcome. Applicants respectfully request that the rejection be reconsidered and withdrawn.



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Attorney Docket # 10961260-2

CONCLUSION

If the Examiner has any further questions or would like to discuss this application in more detail, he is invited to call the Applicants' agent at the telephone number given below. The Applicants respectfully suggest that the claims presently in the application are distinct over the prior art and that the application is now in condition for allowance. Accordingly, the Applicants solicit favorable action.

Respectfully submitted,
Min Cao, et al.

A handwritten signature in black ink, appearing to read "Judy L. Shie".

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June 19, 2002
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JUN 28 2002
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